

challenges to our national security are increasing. Terrorism, climate and demographic changes, resource protection and cybersecurity, and the impact of extreme economic events challenge our current and future national security environment. To combat these challenges, accelerating scientific discovery and technological innovation is a high priority. The Johns Hopkins University Applied Physics Laboratory (APL) has a proud history of applying state-of-the-art science and technology to the national security requirements of the time as well as to the challenges of tomorrow.

For the past seven decades, APL's investment in its science and technology enterprise has been central to ensuring

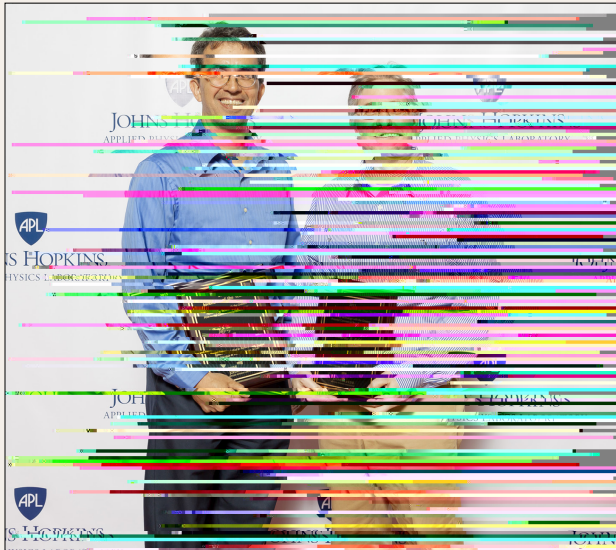
APL work. This year one recipient received the prestigious award for 10 U.S. patents issued during his employment at APL. He is only the 25th person in the history of the Laboratory to qualify for this award.

Creativity is wasted if there is no process in place to take ideas and turn them into something that has market potential. The Ignition Grant Prize for Innovation was established to help APL staff explore innovative ideas outside of APL's traditional programs. Open to all staff, challenges are posted during several cycles held through

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INVENTION OF THE YEAR AWARD FOR 2013

For “System and Method to Rapidly Design Viral Vaccines to Prevent Vaccine Failure”



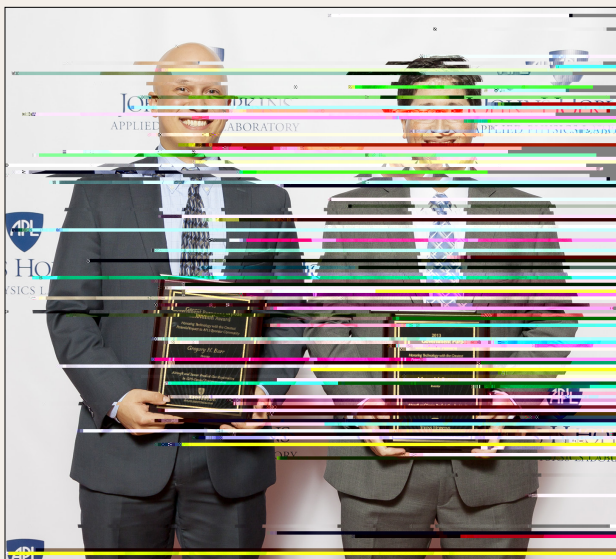
From left to right, Jeffrey Lin and Andrew Feldman.

Existing vaccines are designed to protect against viruses that are already infecting humans and animals. Viruses quickly adapt to resist vaccines and immune systems, and new vaccines currently take years to develop. This award-winning technology speeds up this process and can predict new viruses before they exist.

A. **B.**, Principal Professional Staff, Research and Exploratory Development Department (REDD), Ph.D., Harvard Univ., Physics; **C.**, APL Principal Professional Staff, REDD, M.S., Johns Hopkins Univ., Computer Science

GOVERNMENT PURPOSE INNOVATION AWARD FOR 2013

For “Aircraft and Sensor Product Geo-Registration in GPS-Denied Environments”



From left to right, Gregory Barr and Mason Baron. Not pictured: James Cochran.

Two separate algorithms were developed to perform geo-registration for aerial surveillance and reconnaissance in a GPS-denied environment. The “scan-to-reference” registers a single radar scan to a reference image, and the “scan-to-scan” registers the current radar scan to a previous one. The implementation of these two algorithms significantly improves the geo-location accuracy.

A. **B.**, Principal Professional Staff, Air and Missile Defense Sector, M.S., Johns Hopkins Univ., Electrical and Computer Engineering; **C.**, Associate Professional Staff, Force Projection Sector, B.S., Univ. of Maryland, College Park, Mechanical Engineering; **D.** **C.**, Senior Professional Staff, Asymmetric Operations Sector, M.S., Georgia Institute of Technology, Electrical Engineering

R. W. HART PRIZES FOR 2013

Experimental Research

For "High-Energy Laser (HEL) Effects on Space Systems and Materials"

This project started from what is known and modeled of a high-energy laser encounter with a spacecraft. Using experimental

OUTSTANDING MISSION ACCOMPLISHMENT AWARDS FOR 2013

Current Defense Operational Challenge

For "Minotaur Mission Processor"

Minotaur is a transformational capability for the Navy, Coast Guard, and Customs and Border patrol. It enables interconnecting a diverse set of sensors and data sources across a wide operational area for automatic tracking, identification, and

Emerging Challenge

Outstanding Paper in the *J H APL Technical Digest*

The Walter G. Berl Award

For "Implementing Genome-Informed Personalized Medicine in the US Air Force Medical Service via the Patient-Centered Precision Care Research Program," *J H APL Technical Digest* 31(4), 333–344 (2013)

Outstanding Professional Book

For *Near-Field Cellular Communications*, Wiley-IEEE Press, Hoboken, New Jersey (2013)

This book provides a concise yet comprehensive summary of the key current and emerging technologies that make up the commercial wireless networking landscape. It bridges the often-disparate communities of wireless networking and cellular technologies in a novel way.

By **B. B. B.**, Principal Professional Staff, Asymmetric Operations, Stanford University, Stanford, CA